

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A noise attenuation device for a vehicle exhaust system, comprising:

an exhaust pipe having a passageway for receiving exhaust gas pulses from an engine, said pipe having an outlet at a termination of the pipe, said outlet leading to ambient; and,

a plurality of vanes disposed upstream of said exhaust pipe outlet, said vanes extending from an inner surface of said exhaust pipe and spaced apart from one another, said vanes configured to reduce turbulence in said exhaust gas pulses passing through said exhaust pipe outlet to reduce noise at said exhaust pipe outlet, where said vanes are substantially proximate to said exhaust pipe outlet, and where said exhaust pipe is substantially unobstructed between said vanes and said exhaust pipe outlet.

2. (original) The noise attenuation device of claim 1 wherein said vanes comprise metal vanes formed as punched out tabs in a ring of metal which is fitted within the passageway.

3. (original) The noise attenuation device of claim 1 wherein said vanes comprise metal vanes provided by stamped out tabs of said exhaust pipe and wherein a collar surrounds said exhaust pipe adjacent said vanes.

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4. (original) The noise attenuation device of claim 1 wherein said plurality of vanes comprises one of plastic vanes, ceramic vanes, die-cast aluminum vanes, and cast-aluminum vanes.
5. (original) The noise attenuation device of claim 1 further comprising an inner ring disposed in said passageway, said plurality of vanes extending from an inner surface of said exhaust pipe to said inner ring.
6. (original) The noise attenuation device of claim 1 wherein said plurality of vanes form a honeycomb-shaped vane structure in said passageway.
7. (original) The noise attenuation device of claim 1 wherein each of said plurality of vanes extends across said passageway, said plurality of vanes being generally parallel to one another.
8. (original) The noise attenuation device of claim 1 wherein said plurality of vanes form one of a triangular vane structure and a rectangular vane structure in said passageway.
9. (original) The noise attenuation device of claim 1 wherein said plurality of vanes comprise a wire mesh in said passageway.
10. (original) The noise attenuation device of claim 1 wherein said plurality of vanes are disposed circumferentially around said passageway at a predetermined axial position in said passageway.

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11. (original) The noise attenuation device of claim 10 wherein each of said plurality of vanes extend a predetermined axial distance from said predetermined axial position in said passageway.

12. (cancelled)

13. (previously presented) An exhaust system for an internal combustion engine, comprising:
an exhaust pipe receiving exhaust gas pulses from the engine, said pipe having an outlet at a termination of the pipe, said outlet leading to ambient; and,

an air diffuser disposed upstream of said outlet of said exhaust pipe, said diffuser having an outer wall defining an internal bore communicating with said exhaust pipe, said diffuser further including a plurality of vanes extending from said wall and spaced apart from one another, said vanes configured to reduce turbulence in said exhaust gas pulses exiting said exhaust pipe outlet to reduce noise at said exhaust pipe outlet, where said vanes are substantially proximate to said exhaust pipe outlet, and where said exhaust pipe is substantially unobstructed between said vanes and said exhaust pipe outlet.

14. (original) The exhaust system of claim 13 wherein said diffuser comprises one of a plastic diffuser, a ceramic diffuser, a die-cast diffuser, and a cast-aluminum diffuser.

15. (original) The exhaust system of claim 13 wherein said vanes of said diffuser comprise a wire mesh.

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16. (original) The exhaust system of claim 13 wherein said air diffuser further includes an inner ring, said plurality of vanes extending from said diffuser wall to said inner ring.

17. (original) The exhaust system of claim 13 wherein said plurality of diffuser vanes form a honeycomb-shaped vane structure in said bore.

18. (original) The exhaust system of claim 13 wherein each of said plurality of diffuser vanes extends across said bore, each of said vanes being generally parallel to one another.

19. (original) The exhaust system of claim 13 wherein said plurality of diffuser vanes form one of a triangular vane structure and a rectangular vane structure in said bore.

20. (original) The exhaust system of claim 13 wherein said plurality of vanes of said diffuser are disposed circumferentially around said wall equidistant from adjacent vanes.

21. (cancelled)

22. (previously presented) The apparatus of claim 1, wherein said vanes are located downstream of discontinuities in the exhaust pipe.

23. (cancelled)

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24. (previously presented) The apparatus of claim 23, wherein at least a portion of said vanes are located approximately 20mm from the outlet of the exhaust pipe.

25. (previously presented) A noise attenuation device for a vehicle exhaust system, comprising:

an exhaust pipe having a passageway for receiving exhaust gas pulses from an engine, said pipe having an outlet at a termination of the pipe, said outlet leading to ambient; and

a plurality of vanes disposed upstream of said exhaust pipe outlet to ambient, said vanes extending from an inner surface of said exhaust pipe and spaced apart from one another, said vanes configured to reduce turbulence in said exhaust gas pulses passing through said exhaust pipe outlet to reduce noise at said exhaust pipe outlet, where said vanes are substantially proximate to said exhaust pipe outlet, and where said pipe is substantially unobstructed for a distance between said vanes and said exhaust pipe outlet, said pipe further being substantially unobstructed for said distance upstream of said vanes.